

**MATH2111 Class Exercise 3**

Family Name

Other Names

Student No.

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**CALCULATORS MUST NOT BE USED**

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1. (a) Evaluate  $|2.63|$ .(b) Write down an example of a real number  $x$  for which  $|x| = -x$ .(c) What is  $\lceil 2.6 \rceil$ ?(d) What is  $\lfloor -0.358 \rfloor$ ?(e) Find an example of a real number  $x$  for which  $\lfloor x \rfloor = -\lceil -x \rceil$ . $(2\frac{1}{2})$ 2. (a) Evaluate  $200!/198!$ . (Don't work out  $200!$  or  $198!$ .)(b) Consider the function  $y = 3^x$ .(i) Evaluate  $y$  when  $x = 4$ .(ii) What is the value of  $y$  when  $x = 0$ ?(iii) What is the value of  $x$  when  $y = 0$ ?

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 $(2)$

3. (a) Evaluate  $\log_2 64$ .

(b) Evaluate  $\log_2 1/8$ .

(c) Evaluate  $\log_2 2^{397}$ .

(1½)

4. Consider the polynomial  $f(x) = x^4 - 3x^2 - 5$ .

(a) What is the degree of  $f(x)$ ?

(b) Evaluate  $f(1)$ .

(c) If  $f(x)$  always negative? Give a reason for your answer.

(d) Write down an example of another polynomial  $g(x)$  such that  $\deg[f(x) + g(x)] < \deg[f(x)]$ .

(2)

5. (a) Evaluate  $\sum_{i=1}^4 (3i - 1)$ .

(b) Express  $3 + 4 + 5 + 6$  in Sigma notation.

(c) Evaluate  $\prod_{i=1}^3 (2^i - 1)$ .

(d) Express  $2 \cdot 3 \cdot 4$  in Pi notation.

(2)

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